Ontario

Ontario Ministry of Agriculture and Food

2005 SUPPLEMENT

2004-2005 Guide to Weed Control

For the most recent changes to any information found in the 2004-2005 Guide to Weed Control (Publication 75) and general weed management, visit the Ontario Ministry of Agriculture and Food's "Weed Page" at: www.gov.on.ca/OMAF/english/crops/insects/weeds.html.

This supplement contains corrections to products, rates and precautionary statements found in the full edition of the 2004-2005 Guide to Weed Control, Publication 75, which was released in February of 2004. This supplement also contains **new** product registrations that were approved by the PMRA after the 2004-2005 Guide to Weed Control had gone to press. To order a copy of this publication, call 1-888-466-2372.

NEW INFORMATION THAT'S IMPORTANT IF YOU MANAGE WEEDS IN:

CANOLA:
- NEW TANK-MIX OPTIONS (see page 16)
- PRE-HARVEST RATE CORRECTION (see page 16)

FIELD CORN:
- FORMULATION CHANGE (see pages 9)
- NEW PRODUCTS (see pages 8)
- HERBICIDE LABEL EXPANSION (see page 8)
- NEW REGISTERED WEEDS (see page 8)
- NEW TANK-MIX OPTIONS (see pages 9-11)

SWEET CORN:
- HERBICIDE LABEL EXPANSION (see page 8)

DRY BULB ONIONS:
- NEW PRODUCT (see page 18)

GRAPE VINES (NON-BEARING):
- NEW PRODUCT (see pages 21-22)

INDUSTRIAL FIBRE HEMP:
- NEW PRODUCT (see page 17)

SNOW PEAS:
- NEW PRODUCT (see page 18)

SUGAR BEETS:
- PRODUCT REINSTATEMENT (see pages 19-20)

SOYBEANS:
- NEW PRODUCTS (see pages 12-15)
- NEW TANK-MIX OPTIONS (see pages 12-15)

TOMATOES (TRANSPLANTED):
- NEW TANK-MIX OPTION (see pages 20-21)

TURFGRASS:
- NEW PRODUCTS (see pages 22 and 23)

WINTER WHEAT:
- HERBICIDE LABEL EXPANSION (see page 8)
- REVISED WEED CONTROL RATINGS (see page 7)
- PRODUCT USE CORRECTION (see page 7)

ROADSIDE AND NON-CROP AREAS:
- NEW PRODUCTS (see page 2)

3. PRECAUTIONS WITH PESTICIDES

Correction to the "unwanted pesticide" section: On page 22 of the 2004-2005 Guide to Weed Control it states that the Ministry of the Environment has an agreement with Safety-Kleen for the disposal of unwanted pesticides. This agreement with Safety-Kleen and the Ministry of the Environment is no longer in effect. Consult your regional Ministry of the Environment Office for more information on disposal of unwanted pesticides.

4. HERBICIDES USED IN ONTARIO

T HERBICIDES USED IN ONTARIO

ACTIVE INGREDIENT NAME	TRADE NAME	Registered Crop Uses	Formulation	Guaranteed active concentration	Groups	Winter Storage	Ont. Sch.	Manufacturer Agent Code
clomazone	COMMAND 360 ME	Soybeans	ME	360 g/L	13	B	2	UAG
corn gluten meal	TURFMAIZE PWSGI*	established turfgrass	Gr	98%	---	C	6	ENF
corn gluten meal	NUTRITE PWSGI*	established turfgrass	Gr	100%	---	C	3	NUT
desmedipham	BETANEX	Sugar Beets	EC	150 g/L	7	B	2	BCZ
desmedipham/phenmedipham	BETAMIX	Sugar Beets	EC	(1:1) 150 g/L	7	B	3	BCZ
dicamba	ORACLE	"See Page 6"	Sn	480 g/L	4	B	2	ADJ
glyphosate	ROUNDUP WEATHERMAX	"RR" Corn, Soybean and Canola.	Sn	540 g/L	9	B	2	MOX

FOOTNOTES: Mention of a Brand or Trade name in this table does not constitute a guarantee or warrantee of the product by the Ontario Weed Committee or the Ontario Ministry of Agriculture and Food. Neither does this use signify that that these products are approved to the exclusion of the comparable products. All trade names are capitalized.

* = Pre-Emergent Weed Seed Germination Inhibitor. See page 5 for complete name of product.

Formulation Abbreviations

DC =dispersible concentrate
DG=dry granules
DS = dry soluble
DF = dry flowable
EC = emulsifiable concentrate
EM = emulsion
Fl = flowable
Gi = gel
Gr = granular
Li = liquid
ME = microencapsulated suspension
P = paste
PE = pellets
PS = pressurized spray
SC = soluble concentrate
SG = soluble granules
Sn = solution
SP = soluble powder
Su = suspension (flowable)
WG = wettable granules
WP = wettable powder

Winter Storage

A — Do not allow to freeze.
B — Preferably should not freeze. If frozen, return to original state by allowing product to warm to 10°C–20°C and agitate thoroughly before use.
C — Not usually damaged by freezing. Store in a cool, dry place.
D — Do not allow to freeze — store above 10°C.
E — Do not allow to freeze — store above 4°C (this applies to the AMITROL 240).

Manufacturer Agent Code

See Appendix H, *Herbicide Companies and Agents*, on page 340 in the 2004-2005 Guide to Weed Control. Phone numbers and Web sites are also listed.

New glyphosate product – see underlined and bold text.

TABLE 4-2. GLYPHOSATE PRODUCTS AND THEIR REGISTERED USES

TRADE NAME	FORMULATION	GUARANTEED ACTIVE CONCENTRATION	MANUFACTURER	GLYPHOSATE-TOLERANT CROPS			PREHARVEST APPLICATIONS								
				Canola	Field Corn	Soybean	Barley	Beans	Canola	Flax	Forages	Peas, Field	Oats	Soybean	Wheat
CREDIT	Sn	356 g/L	NUA				✓	✓	✓	✓	✓	✓	✓	✓	✓
FACTOR	Sn	356 g/L	INT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GLYFOS	Sn	356 g/L	CAU	✓		✓	✓	✓	✓	✓		✓		✓	✓
RENEGADE	Sn	356 g/L	MOX				✓	✓	✓	✓	✓	✓		✓	✓
ROUNDUP	Sn	356 g/L	MOX	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ROUNDUP DRY	SG	64%	MOX				✓	✓	✓	✓	✓	✓	✓	✓	✓
ROUNDUP TRANSORB	Sn	360 g/L	MOX	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ROUNDUP WEATHERMAX	**Sn**	**540 g/L**	**MOX**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TOUCHDOWN iQ	Sn	360 g/L	SYN	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VANTAGE	Sn	356 g/L	DWE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VANTAGE PLUS	Sn	360 g/L	DWE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Crop Rotation and Soil pH Restrictions for COMMAND (New Product) and PURSUIT (Missing from the 2004-2005 Guide to Weed Control).

TABLE 4-3. HERBICIDE CROP ROTATION AND SOIL PH RESTRICTIONS

(For other crops, consult the label.)	FIELD CROPS																							
TRADE NAME	Alfalfa	Barley	Barley (Underseeded)	Beans, Kidney	Beans, White	Canola	Canola, (PURSUIT tolerant)	Clover, Red	Corn, Field	Corn, Clearfield	Corn, Seed	Flax—linseed	Oats	Oats (Underseeded)	Peanuts	Rye, Fall	Rye, Fall (Underseeded)	Soybeans	Sunflowers	Tobacco	Wheat, Spring	Wheat, Spring (Underseeded)	Wheat, Winter	Wheat, Winter Underseeded
	Number of months between application and planting																							
COMMAND 360 ME	16	16	16	10	10	10	10	10	10	10	10	16	16	16	16	16	16	✓	16	16	16	16	16	16
PURSUIT	✓	10	22	✓	✓	22	✓	22	10	✓	22	22	22	22	22	22	22	✓	22	22	10	22	3.3	22

TABLE 4-4. HERBICIDE CROP ROTATION AND SOIL PH RESTRICTIONS

(For other crops, consult the label.)	HORTICULTURAL CROPS																									
TRADE NAME	Asparagus	Beans, Lima	Beans, Snap	Beets, Red	Beets, Sugar	Broccoli	Brussels Sprouts	Cabbage	Carrots	Cauliflower	Celery	Corn, Sweet	Cucumber	Garlic	Herbs	Lettuce	Muskmelon	Onions	Parsnips	Peas	Peppers	Potatoes	Pumpkin	Rutabaga	Spinach	Squash	Tomatoes (Transplanted)	Watermelon
	Number of months between application and planting																											
COMMAND 360 ME	16	10	10	16	16	10	16	16	16	16	16	10	10	16	16	16	16	16	16	10	10	10	10	16	16	10	16	16
PURSUIT	22	22	22	22	48	22	22	22	22	22	22	22	22	22	22	22	22	22	22	✓	22	22	22	22	22	22	22	22

✓ = Registered for use on that crop.

Notes on Herbicides

Read these notes together with the recommendations given later in this publication. Additional information on use, toxicity, and safety precautions is also given below.

Complete information on each herbicide is available on the product label located on the herbicide container. The federal Pest Management Regulatory Agency also lists pesticide labels on their Web site at: www.pmra-arla.gc.ca. Many herbicide manufacturers also list product labels and/or Material Safety Data Sheets (MSDS) on their Web sites listed on page 340 in the 2004-2005 Guide to Weed Control.

CLOMAZONE - NEW PRODUCT

Trade Names:, COMMAND 360 ME.
Chemical Family: Isoxazolidinone.
Crop and/or Non-Crop Registrations: Soybeans
105-06935/
Sensitive Weeds: Velvetleaf, Lamb's-quarters, Lady's thumb, Eastern Black Nightshade, Barnyardgrass, Green Foxtail, Yellow Foxtail.
Uptake and Translocation: Primarily absorbed through the roots and is translocated through the xylem in the plant.
Basis of Selectivity: Clomazone is metabolized in soybeans.
Application Methods: Preemergence.
Residual Activity: When applied at recommended rates, Command 360 ME will provide season long weed control. It is relatively immobile in soil and microbial decomposition is the principle path of dissipation. Some rotational restrictions apply, refer to tables 4-3 and 4-4 for more information. Soil texture impacts residual and product efficacy, see product label for appropriate rates.
Spray and Vapour Drift Mitigation: **Do NOT** apply during periods of dead calm or when winds are gusty and in excess of 16 km/hr. **Do NOT** apply by air - use ground equipment only. **Do NOT spray within 90 m** of sensitive plants or sensitive terrestrial habitats. **Do NOT spray within 370 m** of residential areas of towns and subdivisions, areas of established vegetable or fruit production as well as commercial greenhouses and nurseries.
Sensitive Non-target Plant Species: Fruit trees, cherry (fruit, black, pin, choke), poplar, willow, ash, maple, basswood, walnut, elm, ornamentals, hickory and spruce. Horticulture crops: flowers, ornamentals, raspberries, grapes, roses, and strawberries. Field crops: spring and winter wheat, oats, barley, rye, alfalfa and triticale.
Unique Characteristics: Sensitive plants in the application zone will turn white (bleached) as carotenoid biosynthesis is inhibited.

CORN GLUTEN MEAL - NEW PRODUCTS

Trade Name: TURFMAIZE PRE-EMERGENT WEED SEED GERMINATION INHIBITOR; NUTRITE PRE-EMEGENT, CRABGRASS WEED SEED GERMINATION INHIBITOR WITH CORN GLUTEN
Chemical Family: Not applicable.
Crop and/or Non-Crop Registrations: Established Kentucky Bluegrass.
Sensitive Weeds: Inhibits germination of smooth crabgrass and dandelion seed. **This product does not control emerged or established dandelion or smooth crabgrass.**
Uptake and Translocation: not applicable.
Application Methods: Apply before smooth crabgrass and dandelion seed germination to established turf in the spring, late summer or fall.

DESMEDIPHAM - PRODUCT REINSTATEMENT

Trade Name: BETANEX.
Chemical Family: Phenylcarbamate/Phenylcarbamate.
Crop and/or Non-Crop Registrations: Sugar beets.
Sensitive Weeds: Redroot pigweed, lamb's-quarters and wild mustard. Other weeds like ragweed species, wild buckwheat, nightshade species, kochia, goosefoot and stinkweed will be controlled when application of desmedipham is made following treatment with another preplant or preemergence herbicide.
Uptake and Translocation: Desmedipham is readily absorbed by foliage where it inhibits photosynthesis in the chloroplasts of leaf cells.
Basis of Selectivity: Rapid metabolism in tolerant species.

Application Methods: Postemergence beginning at the 2 true-leaf stage of sugar beets. Up to the 2– or 4–leaf stage of weeds depending upon species. Best control is exhibited on very small, actively growing weeds.
Residual Activity: Soil half-life of desmedipham is less than 1 month.
Unique Characteristics: Desmedipham may cause temporary growth retardation and/or chlorosis or tip-burn to sugar beets when applied to stressed plants. Normal growth is resumed in 10 days after application.

DESMEDIPHAM/PHENMEDIPHAM - PRODUCT REINSTATEMENT

Trade Name: BETAMIX.
Chemical Family: Phenylcarbamate.
Crop and/or Non-Crop Registrations: Sugar beets.
Sensitive Weeds: Pigweed species, lamb's-quarters, wild mustard, wild buckwheat, green and yellow foxtail. Other weeds like ragweed species, nightshade species, kochia, goosefoot and stinkweed will be controlled when application of desmedipham/phenmedipham is made following treatment with another preplant or preemergence herbicide.
Uptake and Translocation: Desmedipham/ phenmedipham is readily absorbed by foliage where it inhibits photosynthesis in the chloroplasts of leaf cells.
Basis of Selectivity: Rapid metabolism in tolerant species.
Application Methods: Postemergence beginning at the 2 true-leaf stage of sugar beets. Up to the 2– or 4–leaf stage of weeds depending upon species. Best control is exhibited on very small, actively growing weeds.
Residual Activity: Soil half-life of desmedipham is less than 1 month and of phenmedipham is 25–30 days.
Unique Characteristics: Desmedipham/phenmedipham may cause temporary growth retardation and/or chlorosis or tip-burn to sugar beets when applied to stressed plants. Normal growth is resumed in 10 days after application.

DICAMBA -NEW PRODUCT UNDERLINED AND IN BOLD TEXT.

Trade Names: BANVEL II, **ORACLE**, VANQUISH.
Chemical Family: Benzoic acid.
Crop and/or Non-Crop Registrations: Field corn, spring and winter wheat, spring barley, spring rye, oats, summer fallow and stubble, pastures, red fescue, lowbush blueberries and turf; non-crop areas such as roadsides, utility rights-of-way and railways.
More Information on dicamba: Refer to Page 44 in the 2004-2005 Guide to Weed Control.

GLYPHOSATE - NEW PRODUCT UNDERLINED AND IN BOLD TEXT.

Trade Names: CREDIT, CLEAR-IT 1, CLEAR-IT 2, CLEAR-IT 3, EXPEDITE GRASS & WEED, E-Z-JECT, FACTOR, GLYFOS, RENEGADE, ROUNDUP, ROUNDUP DRY, ROUNDUP TRANSORB, **ROUNDUP WEATHERMAX**, VANTAGE, VANTAGE PLUS, VISION.
Chemical Family: Amino acid.
Crop and/or Non-Crop Registrations: CREDIT, GLYFOS, FACTOR, RENEGADE, ROUNDUP, ROUNDUP TRANSORB, ROUNDUP WEATHERMAX, TOUCHDOWN iQ, VANTAGE, VANTAGE PLUS, — Preplant or postharvest with no cropping restrictions. Preharvest in wheat, barley, soybeans, canola, flax, lentils, peas and forages. FACTOR, GLYFOS, ROUNDUP, ROUNDUP TRANSORB, **ROUNDUP WEATHERMAX**, TOUCHDOWN iQ VANTAGE, AND VANTAGE PLUS for in-crop uses in Roundup Ready crops. Directed applications in ginseng, cherries, grapes, apples, pears, plums and peaches, strawberries as wiper or spot treatment. Non-crop registrations: EXPEDITE GRASS & WEED, ROUNDUP — Brush control; turf renovation; chemical mowing; directed application in woody nursery stock, roadsides and shelterbelts. ROUNDUP — Asparagus. E-Z-JECT — Selective woody brush and tree control. VISION — Silvicultural site preparation, conifer release, forest tree plantings, forest tree nurseries.
More Information on glyphosate: Refer to Page 50 in the 2004-2005 Guide to Weed Control or pages 3, 9, 13 and 14 of this supplement.

8. CEREAL CROPS

New Product: ORACLE (480 g/L) is a generic dicamba product that has the same use rates and registrations in cereal crops as BANVEL II does.

Product Use Correction:

- On Page 100 of the 2004-2005 Guide to Weed Control, there is a reference to the use of 2,4-D on Oats. Disregard that reference, as 2,4-D is **NOT** registered for use on Oats.

Weed Control Rating Amendments - TABLE 8-1: Weed control ratings (out of 10) are given in brackets after the herbicide trade name.

- **Canada Fleabane Control Ratings:** 2,4-D (8), MCPA (7), ESTAPROP/TURBOPROP/DICHLORPROP D (8), BUCTRIL M/BADGE/MEXTROL (7), REFINE EXTRA (4), REFINE EXTRA + BUCTRIL M (7)
- **Dandelion Control Ratings:** BUCTRIL M/BADGE/MEXTROL (6), ACHIEVE L + BUCTRIL M (6)
- **Barnyardgrass Control Ratings:** ACHIEVE LIQUID + BUCTRIL M (8), ACHIEVE LIQUID + PARDNER (8).

TABLE 8–1. CEREAL HERBICIDE WEED CONTROL RATINGS

	Crop					Annual Grasses									Annual Broadleaves																				Perennial Weeds																				Crop Tolerance
Trade Name	oats	spring barley	spring wheat	winter barley	fall rye	fall wheat	barnyard grass	crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witch grass	proso millet	wild oats	buckwheat, wild	cocklebur	chickweed, common	corn spurry	fleabane, Canada	hempnettle	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	shepherd's purse	stinkweed	velvetleaf	bindweed, field	chickweed, mouse-eared	curled dock	dandelion	ground-ivy (creeping-charlie)	horsetail	mallow	milkweed	nutsedge	plantains	quackgrass	sow-thistle	thistle, Canada	vetches	
postemergence broadleaf herbicides																																																							
2,4-D*		✓	✓		✓	✓	0	0	0	0	0	0	0	0	0	4	8	2	2	8	2	4	9	9	7	9	8	?	9	9	8	7	?	7	6	?	2	4	6	0	8	0	5	8	0	F
BANVEL II, ORACLE	✓	✓	✓			✓	0	0	0	0	0	0	0	0	0	9	9	8	9	8	7	9	9	7	9	9	9	?	6	6	9	8	?	9	6	?	0	?	0	0	?	0	9	8	5	F
BUCTRIL M, MEXTROL, BADGE	✓	✓	✓	✓	✓	✓	0	0	0	0	0	0	0	0	0	9	8	2	2	7	7	9	9	9	9	8	9	?	9	9	9	7	?	?	6	?	7	?	0	0	?	0	7	7	?	E
MCPA*	✓	✓	✓	✓	✓	✓	0	0	0	0	0	0	0	0	0	2	7	2	7	7	8	2	9	9	?	9	9	?	9	9	8	7	?	?	6	?	8	?	0	0	?	0	7	7	5	F
postemergence tank-mixes																																																					
ACHIEVE LIQUID + BUCTRIL M		✓	✓				8	?	?	?	9	9	?	?	9	9	8	?	2	7	7	9	9	9	9	8	9	?	9	9	9	7	?	?	6	?	7	?	0	0	?	0	7	7	?	G
ACHIEVE LIQUID + PARDNER		✓	✓				8	?	?	?	9	9	?	?	9	8	8	2	2	?	2	8	9	7	9	7	9	?	8	8	9	5	?	?	?	?	0	?	0	0	?	0	6	5	?	G
BUCTRIL M + REFINE EXTRA			✓			✓	0	0	0	0	0	0	0	0	0	9	8	9	9	7	9	9	9	9	9	8	9	?	9	9	9	7	?	?	6	?	7	?	0	0	?	0	7	7	?	E

Product Label Expansion: REFINE EXTRA - can now be applied in the fall to winter wheat for common chickweed and other winter annual weeds that appear on label.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
WHEAT (WINTER) AND FALL RYE - NOT UNDERSEEDED TO FORAGE CROPS			
Postemergence Broadleaf Herbicides			
thifensulfuron- methyl/ tribenuron methyl REFINE EXTRA (75 DF)	15 g/ha 20 g/ha	8 g/ac	• **Registered for fall or spring use on winter wheat.** For fall use, apply from the 2-leaf growth stage of winter wheat and before the first killing frost. • Apply to emerged young actively growing weeds that are less than 10 cm tall or across. • Canada thistle, sow thistle and round-leaved mallow are suppressed. • Apply when the crop is in the 2-leaf to flag leaf (shot blade) stage for spring use. • Always add water soluble packages to clear water with agitator running. • **Do NOT use on rye.** • Apply only once to the winter wheat crop. • If Refine Extra is applied in the fall, red clover can be underseeded in the spring.
plus surfactant AGRAL 90, AGSURF	2 L/1,000 L	2 L/1,000 L	

9. CORN (FIELD, SEED and SWEET)

New Products:

- **ORACLE (480 g/L)** is a generic dicamba product that has the exact same use rates and registrations in field corn as BANVEL II does.
- **ROUNDUP WEATHERMAX (540 g/L)**: a new glyphosate product with a lower use rate and is registered for use in "Roundup Ready" corn.

Label Expansion:

- **ACCENT TOTAL** — Can now be applied from the 2 to 8-leaf stage of field corn.
- **ACCENT** — Can now be applied to "GG214" Sweet Corn variety.

New Registered Weeds: The following weeds are registered for control or suppression using the following field corn herbicides. Refer to Table 9-1 in the 2004-2005 Guide for the appropriate control ratings of each product on the weed species identified below.

- **Horsenettle** - ROUNDUP ORIGINAL and ROUNDUP TRANSORB (Roundup Ready Corn ONLY) and ULTIM TOTAL.
- **Yellow Foxtail** - CONVERGE
- **Smooth Crabgrass** - BATTALION (PRE ONLY)
- **Fall Panicum** - BATTALION
- **Quackgrass (suppression only)** - BATTALION (When applied at the 1 to 6 leaf stage of quackgrass)
- **Lady's Thumb** - BATTALION

Formulation Changes:

CONVERGE - Prior to 2005, CONVERGE was a co-pack that consisted of two components: CONVERGE 75 WDG and CONVERGE 480. In 2005, CONVERGE will still consist of two components, however the CONVERGE 75 WDG component (a dry granular formulation) has been replaced with CONVERGE PRO (a 480 g/L liquid formulation). This will affect the product rates/acre (see Precautions below on Page 9).

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
CORN (FIELD AND SWEET)			
Soil Applied Grass and Broadleaf Herbicides - FORMULATION CHANGE - refer to underlined text.			
isoxaflutole + atrazine CONVERGE[1]	79 to 105 g/ha + 0.8 to 1.063 kg/ha		• Apply PREPLANT SURFACE (up to 14 days prior to planting) or PRE. • **Do NOT** incorporate treatments prior to planting. • Use the higher application rates for control of fall panicum and suppression of proso millet. • CONVERGE is a co-pack of CONVERGE PRO and CONVERGE 480. • Temporary yellowing of lower corn leaves may occur under adverse weather or soil conditions. • **Do NOT** use CONVERGE on sands, loamy sands and/or soils with less than 2% organic matter. • **Do NOT use on seed corn or sweet corn.**
CONVERGE PRO (480 g/L)	165 to 218 mL/ha + 1.67 to 2.21 L/ha	66 to 87 mL/ac + 0.67 to 0.88 L/ac	
CONVERGE 480 (480 g/L)			

[1]Indicates that this product is a co-pack.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
Postemergence Grass and Broadleaf Herbicides			
NEW PRODUCT— for Roundup Ready (glyphosate tolerant) hybrids only			
glyphosate* glyphosate (360 g/L) or ROUNDUP WEATHEMAX (540 g/L)	0.9 kg/ha 2.5 L/ha 1.67 L/ha	1 L/ac 0.67 L/ac	• Use **ONLY** with pedigreed (certified) corn seed designated as "ROUNDUP READY CORN". See Table 4–2, page 65, for a list of registered glyphosate products. • Apply up to and including the 8-leaf stage of corn. • The initial application is recommended between the 2–6 leaf stage (3–5 leaf is optimum timing) to remove early competition. A second application may be applied up to the 8-leaf stage of corn (8-leaf fully expanded). • Use 100–200 L/ha (40–80 L/ac) of water.
glyphosate ROUNDUP WEATHERMAX (540 g/L) plus atrazine ATRAZINE 480 (480 g/L) ATRAZINE NINE-O (90WG)	0.9 kg/ha 1.67 L/ha 0.75 to 1.0 kg/ha 1.56 to 2.1 L/ha 0.83 to 1.11 kg/ha	0.67 L/ac 0.63 to 0.85 L/ac 0.34 to 0.45 kg/ac	• Use **ONLY** with pedigreed (certified) corn seed designated as "ROUNDUP READY CORN". • Apply up to and including the 5-leaf stage of corn. • Atrazine will provide residual control.
glyphosate ROUNDUP WEATHERMAX (540 g/L) plus dicamba/atrazine MARKSMAN ((1:2) 401 g/L)	0.9 kg/ha 1.67 L/ha 1 to 1.5 kg/ha 2.5 to 3.7 L/ha	0.67 L/ac 1 to 1.5 L/ac	• Use **ONLY** with pedigreed (certified) corn seed designated as "ROUNDUP READY CORN". • Apply up to and including the 5-leaf stage of corn. • Marksman will provide residual control. • See precautions for BANVEL II or ORACLE applied POST, page 130.

* See Table 4-2, *Glyphosate Products and Their Registered Uses*, for a complete list of glyphosate products registered in "Roundup Ready" crops.

New Tank-mix Options:

- **ACCENT 1-PASS + AATREX NINE-O** — atrazine tank-mixed with Accent 1-Pass to control Eastern Black Nightshade.
- **OPTION 35 DF + DISTINCT**
- **OPTION 35 DF + PARDNER + atrazine**

NOTES: Weed control ratings are given as 0–9 where 0 indicates no control, and 9 indicates 90%–100% control under ideal conditions. Ratings are subjective values based on best available information and given general comparisons based on use as described in this guide. Crop tolerance ratings are: E – Excellent, G – Good, F – Fair, P – Poor. Under unfavourable conditions (e.g., too dry, too wet, too cold or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Ratings in **BOLD** indicate the weed is listed on the product label for control or suppression. Please see product label for more information on registered weed species, product uses and precautions.

TABLE 9–1. CORN (FIELD, SEED AND SWEET) HERBICIDE WEED CONTROL RATINGS

	Crop			Annual Broadleaves														Perennials							
Trade Name	seed corn	sweet corn	field corn	barnyard grass	smooth crabgrass	large crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witch grass	proso millet	buckwheat, wild	cocklebur	corn spurry	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed, common	ragweed, giant	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada	**Crop Tolerance**
Postemergence Grass and Broadleaf Herbicides - NEW TANK-MIX OPTIONS																																
OPTION 35DF + DISTINCT		✓		**9**	0	**7/8**	**9**	9	**9**	**8**	**9**	**9**	9	?	?	?	**9**	**9**	**9**	**9**	**9**	**9**	?	**9**	?	?	?	?	**9**	9	9	E
OPTION 35DF + PARDNER + atrazine*		✓		**9**	0	**7/8**	**9**	9	**9**	**7**	**9**	**9**	**9**	8	?	?	**9**	**9**	**9**	**9**	**9**	**9**	?	**9**	7	5	2	5	**8**	7	5	E

- **For use rates and precautions, refer to page 11 of this supplement.**

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
CORN (FIELD AND SWEET)			
Postemergence Grass and Broadleaf Herbicides - NEW TANK OPTIONS			
foramsulfuron OPTION 35DF (35 DF) plus diflufenzopyr/dicamba DISTINCT (70 WG) plus Hasten plus liquid urea ammonium nitrate (UAN)	35 g/ha 100 g/ha 0.2 kg/ha 0.285 kg/ha 1.75 L/ha 2.5 L/ha	 40 g/ac 0.115 kg/ac 0.7 L/ac 1 L/ac	• Apply up to the 6-leaf stage of corn. • **Do NOT** apply OPTION 35 DF to corn treated with organophoshorous insecticides. • **Do NOT** use on seed or sweet corn.
foramsulfuron OPTION 35DF (35 DF) plus bromoxynil PARDNER (280 g/L) plus atrazine AATREX 480 (480 g/L) or AATREX-NINE-O (90 WG) plus Hasten plus liquid urea ammonium nitrate (UAN)	35 g/ha 100 g/ha 0.14 kg/ha 0.5 L/ha 0.5 kg/ha 1.04 L/ha 0.56 kg/ha 1.75 L/ha 2.5 L/ha	 40 g/ac 0.2 L/ac 0.42 L/ac 0.22 kg/ac 0.7 L/ac 1 L/ac	• Apply up to the 8-leaf stage of corn. • **Do NOT** apply OPTION 35 DF to corn treated with organophoshorous insecticides. • **Do NOT** use on seed or sweet corn.
nicosulfuron + prosulfuron + dicamba + atrazine ACCENT ONE-PASS[1] (ACCENT (75 DF) + PEAKPLUS (PEAK (75 WG) + BANVEL II (480 g/L))) + AATREX NINE-0 (90 WG) plus non-ionic surfactant	25 g/ha + 10 g/ha + 0.14 kg/ha 0.5 kg/ha 33 g/ha + 13.3 g/ha + 0.3 L/ha 556 g/ha 2 L/1,000 L	 13.3 g/ac + 5.3 g/ac + 0.12 L/ac 225 g/ac 2 L/1,000 L	• Apply when the corn is in the 2–7 leaf stage. • **Do NOT** apply to corn treated with organophosphorus insecticides. • **Do NOT apply to seed corn, popcorn or sweet corn**. • For the control of nightshade from cotyledon to 6-leaf stage • The addition of atrazine will control eastern black nightshade when applied at the cotyledon to 6 leaf stage of that weed.

11. SOYBEANS

New Products:

- **COMMAND 360 ME** - A soil applied grass and broadleaf herbicide for weed control in soybeans. For specific Information on use rates and tank-mixes, refer to the precautions on pages 13-15.
- **ROUNDUP WEATHERMAX (540 g/L)**: a new glyphosate product with a lower use rate and registered for use in "Roundup Ready" soybean.

New Tank-mix Options:

- **COMMAND 360 ME + SENCOR** - preemergence application timing.
- **COMMAND 360 ME + LOROX L or LOROX DF** - preemergence application timing.
- **COMMAND 360 ME + PURSUIT**- preemergence application timing.
- **COMMAND 360 ME + DUAL II MAGNUM** - preemergence application timing.
- **TOUCHDOWN iQ + PURSUIT** - postemergence in "ROUNDUP READY" soybean only.

Notes: Weed control ratings are given as 0–9 where 0 indicates no control and 9 indicates 90%–100% control under ideal conditions. Ratings are subjective values based on best available information and give general comparisons based on use as described in this guide. Crop tolerance ratings are E – Excellent, G – Good, F – Fair, P – Poor. Under unfavourable conditions (e.g., too dry, too wet, too cold, or poor application) the herbicides may not be as effective as indicated. Ratings may vary with weed and crop stage and with the timing and rates of the product(s) being used. Ratings in **BOLD** indicate the weed is listed on the product label for control or suppression. Please see product label for more information on registered weed species, product uses and precautions.

TABLE 11–1. SOYBEAN HERBICIDE WEED CONTROL RATINGS

	Grasses								Annual Broadleaves											Perennials							
Trade Name	barnyard grass[a]	crabgrass	fall panicum	foxtail, giant	foxtail, green	foxtail, yellow	witch grass	proso millet	buckwheat, wild	cocklebur	fleabane, Canada	lady's thumb	lamb's-quarters	mustards	nightshades, annual	pigweeds	ragweed, common	ragweed, giant	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada	Crop Tolerance
soil applied grass and broadleaf herbicides																											
COMMAND 360 ME	9	9	?	?	9	9	?	?	?	?	?	?	9	?	9	6	8/9	?	9	?	?	?	?	?	?	?	E
soil applied tank-mix options																											
COMMAND 360 ME + SENCOR	9	9	?	?	9	9	?	?	?	?	?	?	9	?	9	9	9	?	9	?	?	?	?	?	?	?	G
COMMAND 360 ME + LOROX	9	9	?	?	9	9	?	?	?	?	?	?	9	?	9	9	9	?	9	?	?	?	?	?	?	?	G
COMMAND 360 ME + PURSUIT	9	9	7	9	9	9	8	7	8	7	?	9	9	9	9	9	8/9	6	9	?	?	?	7	?	?	?	E
COMMAND 360 ME + DUAL II MAGNUM	9	9	8	9	9	9	9	4	?	?	?	?	9	?	9	8/9	8/9	?	9	?	?	?	8	?	?	?	E

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
Soil Applied Grass and Broadleaf Herbicides - NEW PRODUCT			
clomazone COMMAND 360 ME (360 g/L)	0.576 to 0.846 kg/ha 1.6 to 2.35 L/ha	0.64 to 0.94 L/ac	• Apply PRE. • **Do NOT** incorporate. • For light textured soils - Apply COMMAND at 1.6 L/ha. • For medium textured soils - Apply COMMAND at 2.3 L/ha. • For heavy textured soils - Apply COMMAND at 2.35 L/ha. • Control of Yellow foxtail is achieved when COMMAND is applied at 2.3 to 2.35 L/ha. • **Do NOT** use on Natto soybeans. • Some rotational cropping restrictions apply (see Table 4–3). • **Off-target drift will cause severe damage to susceptible plants:** • **Do NOT** exceed a spray pressure of 207 Kpa (30 P.S.I) or consider using low drift nozzles. • **Do NOT** apply when winds are dead calm or gusty and exceed 16 km/hr. • Apply when temperatures are below 25°C. • Use a **90 to 370 metre buffer zone** from sensitive areas (See Notes on clomazone, page 5, for more specific information).
Soil Applied Tank-mix Options - NEW TANK-MIX OPTIONS			
clomazone COMMAND 360 ME (360 g/L) plus metribuzin SENCOR 75 DF (75 WG)	0.576 to 0.846 kg/ha 1.6 to 2.35 L/ha 0.281 to 0.398 kg/ha 0.375 to 0.530 kg/ha	0.64 to 0.94 L/ac 0.15 to 0.212 kg/ac	• Apply PRE. • **Do NOT** incorporate. • For light textured soils - Apply COMMAND at 1.6 L/ha and SENCOR at 0.375 kg/ha. • For medium textured soils - Apply COMMAND at 2.3 L/ha and SENCOR at 0.530 kg/ha. • For heavy textured soils - Apply COMMAND at 2.35 L/ha and SENCOR at 0.530 kg/ha. • **Do NOT** use on Natto or metribuzin sensitive soybeans. • Some rotational cropping restrictions apply (see Table 4–3). **Do NOT** apply by air - use ground equipment only. • **Off-target drift will cause severe damage to susceptible plants:** • **Do NOT** exceed a spray pressure of 207 Kpa (30 P.S.I) or consider using low drift nozzles. • Apply when temperatures are below 25°C. • **Do NOT** apply when winds are dead calm or gusty and exceed 16 km/hr. • Use a **90 to 370 metre buffer zone** from sensitive areas (See Notes on clomazone, page 5, for more specific information).

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
clomazone COMMAND 360 ME (360 g/L) plus linuron LOROX DF (50 DF) or plus linuron LOROX L (480 g/L)	0.576 to 0.846 kg/ha 1.6 to 2.35 L/ha 0.8 to 4.4 kg/ha 1.6 to 2.2 kg/ha 0.96 to 1080 kg/ha 2 to 2.25 L/ha	 0.64 to 0.94 L/ac 0.64 to 0.88 kg/ac 0.8 to 0.9 L/ac	• Apply PRE. • **Do NOT** incorporate. • For light textured soils - Apply COMMAND at 1.6 L/ha and either LOROX L at 2 L/ha **or** LOROX DF at 1.6 kg/ha. • For medium textured soils - Apply COMMAND at 2.3 L/ha and either LOROX L at 2.25 L/ha **or** LOROX DF at 2.2 kg/ha. • For heavy textured soils - Apply COMMAND at 2.35 L/ha and either LOROX L at 2.25 L/ha **or** LOROX DF at 2.2 kg/ha. • **Do NOT** use on Natto soybeans. • Some rotational cropping restrictions apply (see Table 4–3). • **Off-target drift will cause severe damage to susceptible plants:** • **Do NOT** exceed a spray pressure of 207 Kpa (30 P.S.I) or consider using low drift nozzles. • **Do NOT** apply when winds are dead calm or gusty and exceed 16 km/hr. • Apply when temperatures are below 25°C. • Use a **90 to 370 metre buffer zone** from sensitive areas (See Notes on clomazone, page 5, for more specific information).
clomazone COMMAND 360 ME (360 g/L) plus imazethapyr PURSUIT (240 g/L)	0.576 to 0.846 kg/ha 1.6 to 2.35 L/ha 0.075 kg.ha 0.312 L/ha	 0.64 to 0.94 L/ac 0.125 L/ac	• Apply PRE. • **Do NOT** incorporate. • For light textured soils - Apply COMMAND at 1.6 L/ha. • For medium textured soils - Apply COMMAND at 2.3 L/ha. • For heavy textured soils - Apply COMMAND at 2.35 L/ha. • **Do NOT** use on Natto soybeans. • Some rotational cropping restrictions apply (see Table 4–3). • **Off-target drift will cause severe damage to susceptible plants:** • **Do NOT** exceed a spray pressure of 207 Kpa (30 P.S.I) or consider using low drift nozzles. • **Do NOT** apply when winds are dead calm or gusty and exceed 16 km/hr. • Apply when temperatures are below 25°C. • Use a **90 to 370 metre buffer zone** from sensitive areas (See Notes on clomazone, page 5, for more specific information).

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
clomazone COMMAND 360 ME (360 g/L) plus s-metolachlor/benoxacor DUAL II MAGNUM (915 g/L)	0.576 to 0.846 kg/ha 1.6 to 2.35 L/ha 1.6 kg/ha 1.75 L/ha	 0.64 to 0.94 L/ac 0.7 L/ac	• Apply PRE. • **Do NOT** incorporate. • For light textured soils - Apply COMMAND at 1.6 L/ha. • For medium textured soils - Apply COMMAND at 2.3 L/ha. • For heavy textured soils - Apply COMMAND at 2.35 L/ha. • **Do NOT** use on Natto soybeans. • Some rotational cropping restrictions apply (see Table 4–3). • **Off-target drift will cause severe damage to susceptible plants:** • **Do NOT** exceed a spray pressure of 207 Kpa (30 P.S.I) or consider using low drift nozzles. • Apply when temperatures are below 25°C. • **Do NOT** apply when winds are dead calm or gusty and exceed 16 km/hr. • Use a **90 to 370 metre buffer zone** from sensitive areas (See Notes on clomazone, page 5, for more specific information).
Postemergence Grass and Broadleaf Herbicides — NEW glyphosate Product for Roundup Ready Soybeans Only (See underlined text)			
glyphosate glyphosate*(360 g/L) or ROUNDUP WEATHERMAX (540 g/L)	0.9 kg/ha 2.5 L/ha 1.67 L/ha	 1 L/ac 0.67 L/ac	• For use only with pedigreed (certified) soybean seed designated as "ROUNDUP READY SOYBEANS". • Apply between the first trifoliate leaf stage and the full flower stage of the soybeans. • Weeds are more easily controlled and weed competition avoided when applications are made when weeds are small, although weeds up to 25 cm tall will be controlled. • A second application may be made for later flushes emerging after the initial application. • Use 100–200 L/ha (40–80 L/ac) water.
glyphosate glyphosate* (360 g/L) or ROUNDUP WEATHERMAX (540 g/L)	1.8 kg/ha or 0.9 + 0.9 kg/ha 5 L/ha or 2.5 + 2.5 L/ha 3.33 L/ha or 1.67 + 1.67 L/ha	 2 L/ac or 1 + 1 L/ac 1.33 L/ac or 0.67 + 0.67 L/ac	• For use only with pedigreed (certified) soybean seed designated as "ROUNDUP READY SOYBEANS". • Apply when milkweed, perennial sow-thistle and Canada thistle are 15–60 cm and nutsedge is 5–15 cm in height and actively growing for best results. • If the sequential applications are used, make them 2 weeks apart for best results.
Postemergence Grass and Broadleaf Herbicides — NEW glyphosate products registered for use with PURSUIT in Roundup Ready Soybeans Only			
glyphosate glyphosate* (360 g/L) or ROUNDUP WEATHERMAX (540 g/L) plus imazethapyr PURSUIT (240 g/L)	0.9 to 1.8 kg/ha 2.5 to 5 L/ha 1.67 to 3.33 L/ha 0.038 to 0.05 kg/ha 0.16 to 0.21 L/ha	 1 to 2 L/ac 0.67 to 1.33 L/ac 0.065 to 0.085 L/ac	• FACTOR, ROUNDUP TRANSORB, ROUNDUP WEATHERMAX or TOUCHDOWN iQ can be tank-mixed with PURSUIT. • For use only with pedigreed (certified) soybean seed designated as "ROUNDUP READY SOYBEANS". • Apply between the first trifoliate leaf stage and the third trifoliate leaf stage of the soybeans. • Use only once per season. • Some rotational cropping restrictions apply (see PURSUIT label and Table 4–3).

* See Table 4-2, *Glyphosate Products and Their Registered Uses*, for a complete list of glyphosate products registered in "Roundup Ready" crops.

12. OTHER FIELD CROPS

CANOLA - New Tank-mix Option:

- **TOUCHDOWN iQ + LONTREL 360** - For use only in "Roundup Ready" Canola.

CANOLA - New Product:

- **ROUNDUP WEATHERMAX (540 g/L)**: a new glyphosate product with a lower use rate and registered for use in "Roundup Ready" Canola.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
CANOLA — SPRING PLANTED			
Canola — NEW TANK-MIX for use in Roundup Ready Canola only			
glyphosate TOUCHDOWN iQ (360 g/L) or ROUNDUP WEATHERMAX (540 g/L) plus clopyralid LONTREL 360 (360 g/L)	0.45 kg/ha 1.25 L/ha 0.83 L/ha 0.10 kg/ha 0.28 L/ha	0.5 L/ac 0.33 L/ac 0.11 L/ac	• Provides season long top growth control of Canada Thistle and control of wild buckwheat. • For use only with pedigreed (certified) canola seed designated as "Roundup Ready Canola". • LONTREL is recommended for use **ONLY** on the following cultivars: CYCLONE, EBONY, JEWEL, 48A65 and HYOLA 401. • Apply when canola is in the 2-6 leaf stage. • Apply in 100 L/ha (40 L/ac) of water • For more information on weed controlled and rates, refer to the TOUCHDOWN iQ and LONTREL product labels.
Canola — NEW PRODUCT for use in Roundup Ready Canola only			
glyphosate glyphosate* (360 g/L) or ROUNDUP WEATHERMAX (540 g/L)	0.297 to 0.45 kg/ha 0.825 to 1.25 L/ha 0.55 to 0.83	0.33 to 0.5 L/ac 0.22 to 0.33 L/ac	• For use only with pedigreed (certified) canola seed designated as "Roundup Ready Canola". • Apply up to the 6-leaf stage of the canola. A second application may be made for later flushes emerging after the initial application and for improved results on perennial weeds. • The higher rate should be used when weeds are larger, when weed pressure is high and for perennial weeds.

Canola and Mustard — Harvest-Aid: RATE CORRECTIONS (see underlined text)			
diquat REGLONE DESICCANT (240 g/L) plus surfactant AGRAL 90 or AG-SURF	0.3 to 0.408 kg/ha 1.25 to 1.7 L/ha 1 L/1,000 L	0.5 to 0.68 L/ac 1 L/1,000 L	• Apply when crop is 60%–75% seed turn (green or brown) stage. • Harvest no later than 14 days after herbicide application to avoid pod shatter. • Use higher rate for heavy canopy. • Use minimum of 225 L/ha spray volume. • DRIFT will injure adjacent crops or plants.

*See Table 4-2, *Glyphosate Products and Their Registered Uses*, for a complete list of glyphosate products registered in "Roundup Ready" crops.

INDUSTRIAL FIBRE HEMP- New Product:

- **ASSURE II -** For postemergent annual grass and quackgrass control in Industrial Fibre Hemp.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
INDUSTRIAL HEMP GROWN FOR FIBRE PRODUCTION			
Site Preparation Before Planting — See Chapter 6, ***Special Methods of Weed Control***, page 84.			
Industrial Hemp — Postemergence Grass Herbicides			
quizalofop-p-ethyl ASSURE II (96 g/L) plus oil concentrate SURE-MIX	0.036 to 0.07 kg/ha 0.38 to 0.75 L/ha 5 L/1000 L	0.15 to 0.3 L/ac 5 L/1,000 L	• Make one application per year. Apply to emerged annual grasses and volunteer cereals when the crop is at the 2-6 crop leaf stage (6-25 cm in height). • Use the 0.38 L/ha (0.15 L/ac) rate of ASSURE II for control of volunteer corn, volunteer cereals and green foxtail. • The 0.5 L/ha (0.2 L/ac) rate of ASSURE II will suppress quackgrass and also control barnyard grass. • Use the 0.75 L/ha (0.3 L/ac) rate of ASSURE II for control of quackgrass. • Use a minimum of 100Litres of water/ha with a spray pressure of 210-275 kPa.

13. VEGETABLE CROPS

ONIONS - New Product:

- **FRONTIER** - For suppression of yellow nutsedge when applied before weed emergence and postemergent to Onions.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
ONIONS			
Onions — Postemergence Grass Herbicides			
POSTEMERGENCE — Leaf stage of the weeds is critical for good weed control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to recommended leaf stages. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.			
dimethenamid FRONTIER (900 g/L)	1.68 kg/ha 1.87 L/ha	0.75 L/ha	• Apply **ONLY** at the loop stage of onion. • FRONTIER will provide suppression of yellow nutsedge when applied before yellow nutsedge has emerged. • Apply only once per growing season.

SNOW PEAS - New Product:

- **POAST ULTRA** - For postemergent annual grass and quackgrass control in Snow Peas.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
SPECIALTY VEGETABLES			CHINESE BROCCOLI, RADISH & CABBAGE, KOHLRABI, MUSTARD CABBAGE, FUZZY SQUASH, SNOW PEAS
Specialty Vegetables — Postemergence Grass Herbicides			
sethoxydim POAST ULTRA (450 g/L) plus surfactant/solvent MERGE	0.15 to 0.5 kg/ha 0.32 to 1.1 L/ha 1 to 2 L/ha	0.13 to 0.45 L/ac 0.4 to 0.8 L/ac	• For use **ONLY** on Chinese broccoli, Chinese cabbage, kohlrabi, mustard cabbage and Chinese radish and snow peas. • Apply to actively growing grasses. • Apply using 110–200 L/ha (44–80 L/ac) water volume. • For annual grass, use 0.32 L/ha. Apply at the 1–6 leaf stage. • For volunteer grains, use 0.47 L/ha. • For quackgrass, use 1.1 L/ha. Apply up to the 3-leaf stage. Thorough preplant tillage will ensure more uniform quackgrass emergence. Cultivate after 7 days in wide row crops. Use the high rate of MERGE for quackgrass. • Use the 0.32 L/ha rate **ONLY** for snow peas. • **Do NOT** apply closer than 30 days to harvest.

SUGAR BEETS - Product Reinstatement:

- **BETANEX, BETAMIX and applicable tank-mixes. See information below and on the next page.**

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
SUGAR BEETS (PROCESSING)			
Caution about Herbicide Residues — Sugar beets are one of most sensitive crops to herbicide residues from the previous year's crop. They are particularly sensitive to residues from many of the Group 2 herbicides, including PURSUIT, BROADSTRIKE, CLASSIC and PEAK. Low soil pH (below 6.0) or high soil pH (above 7. 5) can be a factor to delay the breakdown of these herbicides, increasing crop injury in rotational crops. Please see Table 4–3, *Herbicide Crop Rotation and Soil pH Restrictions*, on page 67, as well as product labels and your herbicide and sugar company representatives for more details on your situation.			
POSTEMERGENCE — Leaf stage of the weeds is critical for good weed control. Smaller weeds are generally easier to kill but there needs to be enough leaf surface to intercept the herbicide. Apply according to recommended leaf stages. Crop stage is important to optimize crop safety. Adjuvants will frequently improve the weed control when used as directed. Weather or other conditions may influence the optimum rate of adjuvant, see the product label for more details. Always use appropriate drift management technology.			
Sugar Beets (Processing) — Postemergence Broadleaf Herbicides — REINSTATED PRODUCTS and TANK-MIX OPTIONS			
desmedipham BETANEX (150 g/L)	Consult label and your processor for application rates		• Apply POST when sugar beets have at least 2 true leaves. • Apply before the weeds have 4 true leaves (before 2 true leaves is optimum). • Wait a minimum of 7 days before making a second application. • Consult label for split (reduced rate) applications. • **Do NOT** spray in excess of a total of 16.5 L/ha of BETANEX per year. • **Do NOT** spray under extreme temperature or drought conditions. • **Do NOT** spray if dew is present. • Yellowing of the crop may occur, but sugar beets will recover. • **Do NOT** spray if rainfall is expected within 6 hr. • Preharvest interval is 60 days.
desmedipham/phenmedipham BETAMIX ((1:1)150 g/L)	Consult label and your processor for application rates		• Apply POST when sugar beets have at least 2 true leaves. • Apply before the weeds have 4 true leaves (before 2 true leaves is optimum). • Wait a minimum of 7 days before making a second application. • Consult label for split (reduced rate) applications. • **Do NOT** spray in excess of a total of 16.5 L/ha of BETAMIX per year. • **Do NOT** spray under extreme temperature or drought conditions. • **Do NOT** spray if dew is present. • Yellowing of the crop may occur, but sugar beets will recover. • **Do NOT** spray if rainfall is expected within 6 hr. • Preharvest interval is 60 days.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
desmedipham/phenmedipham BETAMIX ((1:1)150 g/L) plus endothall HERBICIDE 273 (360 g/L)	Consult label and your processor for application rates		• Apply POST when sugar beets have 4-6 true leaves. • Best weed control achieved when weeds have fewer than 2 true leaves. • Use lower rate on light, sandy soils. • Use the lower rate on smaller sugar beets or sugar beets under stress. • Apply when average temperature is higher than 15°C for best results. • **Do NOT** spray under extreme temperature or drought conditions. • **Do NOT** spray if dew is present. • Yellowing of the crop may occur, but sugar beets will recover. • **Do NOT** spray if rainfall is expected within 6 hr. • Preharvest interval is 90 days.
triflusulfuron-methyl UPBEET (50 DF) plus desmedipham/phenmedipham BETAMIX ((1:1)150 g/L)	17.5 to 35 g/ha 35 to 70 g/ha 0.26 to 0.53 kg/ha 1.75 to 3.5 L/ha	14 to 28 g/ac 0.7 to 1.4 L/ac	• Apply POST when sugar beets are actively growing. • Yellowing of the crop may occur, but sugar beets will recover. • Make 2 applications 5–10 days apart, or as weeds emerge, to weeds with fewer than 4 true leaves. Best control is obtained if weeds have less than 2 leaves. • Use the higher rate for larger weeds and heavy weed populations. • If velvetleaf is the predominant weed, use of UPBEET alone with an adjuvant is preferable. • **Do NOT** use an adjuvant with this tank-mix. • **Do NOT** use more than 100 g/ha (40 g/ac) of UPBEET in a season. • **Do NOT** apply under extreme temperature or drought conditions. • **Do NOT** spray if dew is present. • **Do NOT** spray if rainfall is expected within 6 hours. • Preharvest interval is 60 days.

TRANSPLANTED TOMATOES - New Tank-Mix Options:

- **PRISM + PINNACLE** - For postemergent grass and broadleaf weed control in transplanted tomatoes.

TABLE 13–1. VEGETABLE HERBICIDE WEED CONTROL RATINGS

	Grasses					Annual Broadleaves								Perennials						
Trade Name	barnyard grass	crabgrass	fall panicum	foxtails	witch grass	buckwheat, wild	lady's thumb	lamb's-quarters	mustards	nightshades	pigweeds	ragweed	velvetleaf	bindweed, field	horsetail	milkweed	nutsedge	quackgrass	sow-thistle	thistle, Canada
postemergence tank-mix options																				
PRISM	9	8	9	8[b]	9	?	8	9	9	4[c]	9	5	8	2	2	2	2	7	2	2

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
TOMATOES (TRANSPLANTED)			
Tomatoes (Transplanted) — Postemergent Tank-mix Options			
rimsulfuron PRISM (25DF) thifensulfuron methyl PINNACLE (75% DF) plus non-ionic surfactant AGRAL 90	15 g/ha 60 g/ha 4.125 to 6.0 g/ha 5.5 to 8.0 g/ha 0.2% v/v 2 L/1000 L water	24 g/ac 2.2 to 3.2 g/ac 0.2% v/v 2 L/1000 L water	• Apply POST when hairy nightshade is up to the 4-leaf stage, quackgrass is in the 3–6 leaf stage (less than 10 cm tall), annual grasses are in the 1–6 leaf stage and redroot pigweed is at the 4–6 leaf stage. • Use **only** on processing tomatoes. • Apply 3 weeks after transplanting to weeds less than 10 cm tall. • **Do NOT** apply in less than 200 L water/ha. • **Do NOT** apply if rain is expected within 2 hours of application. • **Do NOT** apply to tomatoes that are stressed. • **Do NOT** apply within 45 days of harvest.

15. TREE FRUIT & GRAPES

GRAPES (NON-BEARING) - New Product:

FRONTIER - For control of annual grasses and certain broadleaf weeds in non-bearing grape vines.

TABLE 15–1. FRUIT CROP WEED CONTROL RATINGS

	Crop Registrations									Annual Grasses						Annual Broadleaves						Perennial Weeds																	
Trade Name	apples	apricots	blackberries	cherries/plums	currants/gooseberries	grapes	highbush blueberries	peaches	pears	raspberries	barnyard grass	crabgrass	fall panicum	foxtail	witch grass	sandbur	chickweed, common	lady's-thumb	lamb's-quarters	mustards	pigweeds	ragweed	bindweed, field	chickweed, mouse-eared	dandelion	goldenrod	grape, wild	ground-ivy (creeping-charlie)	mallow	milkweed	nightshade, climbing	nutsedge	plantains	poison-ivy	quackgrass	sow-thistle	stinging nettle	thistle, Canada	vetches	virginia creeper
soil applied grass herbicides																																							
FRONTIER					✓						9	9	8	9	9	4	?	2	7	2	8	4	0	?	?	?	?	?	?	0	?	8	?	?	0	0	0	0	0	0

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
GRAPES			
Grapes — Year of Planting and 2nd Year Non-bearing Grapevines (Soil Applied Grass Herbicides) - NEW PRODUCT			
Cultivation after planting is needed to level the soil, and early establishment on trellises or staked will minimize damage from cultivation. Hilling for winter protection can be started in late summer, and will control late germinating weeds. Removing of hills each spring will also aid in weed control. Recommended rates /ha or /ac refer to area actually treated with herbicide. Unless specified, apply all treatments in 150–300 L/ha (60–120 L/ac) water. **PREEMERGENCE (PRE)** — Rainfall at 15–20 mm within 7–10 days after application is necessary to activate preemergence treatments. Shallow cultivation, or harrowing will control weed escapes and improve herbicide activity in the absence of rainfall. **CAUTION** — Simazine, KARMEX, DEVRINOL and SINBAR residues, high enough to harm many crops, may persist for several years after removal of vineyard.			
dimethenamid FRONTIER (900 g/L)	1.26 kg/ha 1.4 L/ha	0.56 L/ac	• PRE —rainfall is required within 10 days of application to achieve sufficient herbicide activation. • **Do NOT** apply by air. • **Do NOT** harvest within 2 years of application on 1st year grapes. • **Do NOT** harvest within 1 year of application on 2nd year grapes. • Apply to weed-free soil, after planting or dehilling.

17. TURFGRASS (LAWNS, PARKS, GOLF COURSES AND SOD FARMS)

New Products: TURFMAIZE and **NUTRITE PRE-EMERGENT, CRABGRASS WEED SEED GERMINATON INHIBITOR** are corn gluten meal products that inhibit germination of dandelion and smooth crabgrass seed in established turfgrass.

Active Ingredient TRADE NAME (Concentration)	RATE (active) PRODUCT per HA	RATE PRODUCT per ACRE	PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)
LAWNS, PARKS, GOLF COURSES & SOD FARMS			
Turfgrass — pre-emergent grass herbicide. Inhibitors of smooth crabgrass and dandelion seed germination.			
corn gluten meal NUTRITE PRE-EMERGENT, CRABGRASS WEED SEED GERMINATION INHIBITOR (100% corn gluten meal)	980 kg/ha or 9.8 kg/100 m^2	392 kg/ac or 20 lbs/1000 sq. ft.	• The product may inhibit dandelion and smooth crabgrass weed seed germination when used in conjunction with a sound lawn maintenance program • This product will not control emerged or established dandelion or smooth crabgrass. • PRE- Apply to established turf twice a year; once in early spring and once in late summer or early fall to sports fields, parks, golf areas and sod farms. • Apply using a rotary or small hand spreader. • Spring application: two weeks before large crabgrass seed germination. • Late summer or early fall: after heat stress has passed. • Apply to a mature lawn were established perennial ryegrass is the predominant grass species. • **Do NOT** apply on newly seeded grass, wait until after first mowing • **Do NOT** apply under windy conditions

			• **Do NOT** apply in the spring if overseeding or resodding in the spring. • **Do NOT** apply in the fall if overseeding or resodding in the fall. • **Do NOT** apply if allergic to corn
Active Ingredient TRADE NAME (Concentration)	**RATE (active) PRODUCT per HA**	**RATE PRODUCT per ACRE**	**PRECAUTIONS (For more information, see Chapter 4, page 25 and Chapter 5, page 74.)**
corn gluten meal TURFMAIZE PRE-EMERGENT WEED SEED GERMINATION INHIBITOR (98% corn gluten meal)	970 kg/ha or 9.7 kg/100 m^2	388 kg/ac or 19.8 lbs/1000 sq. ft.	• The product may inhibit dandelion and smooth crabgrass weed seed germination when used in conjunction with a sound lawn maintenance program • This product will not control emerged or established dandelion or smooth crabgrass. • PRE- Apply to Kentucky bluegrass turf twice a year: once in the early spring and once in the late summer/early fall. • Apply using a rotary or small hand spreader • Spring application: apply to established Kentucky bluegrass turf in early spring before smooth crabgrass and dandelion seed germination • Late Summer/early fall; Apply to established Kentucky bluegrass turf in late summer or early fall after heat stress has passed. • Apply when soil is moist and rain is forecasted within 2 days of treatment • If rainfall does not occur within 2 days of treatment, irrigation is required • Excessive moisture at time of treatment may reduce the effectiveness • **Do NOT** apply on newly seeded grass, wait until after first mowing • **Do NOT** apply in the spring if overseeding or resodding in the spring • **Do NOT** apply in the fall if overseeding or resodding in the fall • **Do NOT** apply if allergic to corn

18. ROADSIDES AND NON-CROP AREAS

New Product:

- **ORACLE (480 g/L)** - A generic dicamba product.

- **TURBOPROP 600 -** A generic dichlorprop/2,4-D product with a 582 g/L active ingredient rate and therefore shares the same product rates as both ESTAPROP and DICHLORPROP D for the following uses:

- Brush Control: Stem Foliage Treatments Applied to "Runoff" on Most Deciduous Woody Trees (Page 307 - 2004-2005 Guide to Weed Control).
- Brush Control: Basal-Bark Treatments in Oil as a Carrier (Page 308 - 2004-2005 Guide to Weed Control).
- Brush Control: Stump Treatment After Cutting Most Deciduous Woody Trees (Page 309 - 2004-2005 Guide to Weed Control).
- Perennial Weed Control (Non-Crop Land): Postemergent Broadleaf Herbicide (Page 312 - 2004-2005 Guide to Weed Control).
- Poison Ivy Control: Postemergence (page 313 - 2004-2005 Guide to Weed Control).
- Roadside Weed Control: Postemergent Broadleaf Herbicide (Page 315 - 2004-2005 Guide to Weed Control).

Discard old editions of this publication. Each year the Ontario Weeds Sub-committee of the Ontario Pest Management Research and Services Committee reviews the pesticides listed in this publication. To the best knowledge of the committee, at the time of printing, all of these pesticides were:

- federally registered
- reviewed by the Ontario Pesticides Advisory Committee (OPAC)
- classified by the Ministry of the Environment as of Deccember 2004.

The information in this publication is general information only. By printing this publication, the Ministry of Agriculture and Food does not offer any warranty or guarantee, nor does it assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

The pesticide product label is a legal document. It is against the law to use the product in any other way. You must also use all pesticides in accordance with the *Pesticides Act* and Regulation 914, administered by the Ontario Ministry of the Environment.

This publication lists a number of brand names of pesticides. This is for your convenience only. It is neither an endorsement of the product nor a suggestion that similar products are ineffective.

Consult each product label for specific information such as compatibility with other materials and the effect of environmental conditions. Weather and other factors influence the effectiveness of pesticides and the likelihood of crop injury.

Health Canada has established maximum residue limits (MRLs) for pesticides. Processors or retailers may demand more restrictive limits. Growers should seek advice of their intended market as to which restrictions or limitations apply. Keep accurate and up-to-date records on pesticide use in each crop.

Federal Registration of Pesticide Products

The Pest Management Regulatory Agency (PMRA) of Health Canada grants registration following an evaluation of scientific data to ensure that the product has merit and value; and the human health and environmental risks associated with its proposed use are acceptable.

1. Full Registration

Pesticide registrations are normally granted for a period of five years, subject to renewal.

2. Temporary Registration

Temporary registration may be granted for a period not to exceed one year, where the registrant agrees to produce additional scientific or technical information, or the pesticide is used for emergency control of a serious pest outbreak.

Supplemental Labels

You MUST obtain a supplemental label and follow all the label directions when PMRA approves new uses for a registered pesticide that do not appear on the current label.

Examples of when you must use a supplemental label include:

- **Temporary Registrations for Emergency Use**
- **Minor Use Label Expansion (new label statements for crops that do not already appear on that product label)**

You can obtain a copy of a supplemental label from the pesticide manufacturer or pesticide vendor, the grower association that sponsored the emergency registration or minor use, from OMAF or PMRA's Pest Management Information Service.

For more information on the federal registration status check the PMRA web site at *www.hc-sc.gc.ca/pmra-arla* or call **1-800-267-6315**.

Regulation of Pesticides in Ontario

Classification of Pesticides into "Schedules"

The Ministry of the Environment classifies all pesticide products into one of six **schedules,** based on the potential hazards that product may have for human health and the environment. For up-to-date information on the regulatory status of any pesticide check the Ontario Pesticides Advisory Committee Web site at *www.opac.gov.on.ca* or call (416) 314-9230/Fax (416) 314-9237.

Licensing and Certification Requirements for Pesticide Users

You must be a certified grower or licensed exterminator to buy and use Schedule 1, 2 and 5 pesticides.

Requirements for Growers and Their Assistants

Growers must be certified through the **Grower Pesticide Safety Course** to buy and use Schedules 1, 2 or 5 pesticides on land they farm. There must be at least one certified grower for each farm operation.

All agricultural assistants must also receive formal pesticide safety training, recognized by the Ministry of the Environment, before they can use Schedule 2 or 5 pesticides under the supervision of a certified grower. This applies to all assistants — including family members, farm employees and seasonal workers.

For more information about training for growers and agricultural assistants check the Ontario Pesticide Education Program Web site at *www.ridgetownc.uoguelph.ca/opep/* or call **1-800-652-8573.**

Requirements for Commercial Applicators and Their Assistants

If you plan to apply pesticides as a business, you must be a licensed exterminator. **This includes farmers who custom apply pesticides for other farmers and charge a fee for this service**. You must complete a home study course and certification exams, and send proof of certification to the Ministry of Environment to obtain your license.

Unlicensed assistants must be **Technicians** before they may handle Schedule 2 (with restrictions), 3, 4 and 6 products under indirect supervision of a licensed exterminator. Technicians may not handle Schedule 1 and 5 products. For more information about exterminators and technicians check the Ontario Pesticide Training & Certification Web site at *www.ridgetownc.uoguelph.ca/optc* or call **1-888-620-9999**.

Cette publication est aussi disponible en français.

Ontario

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